

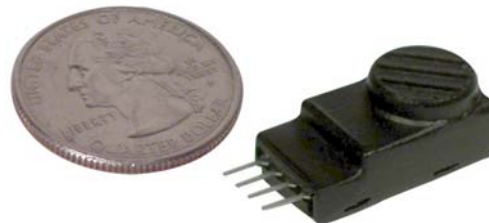
The innovative HS-2000V Humidity Sensor combines capacitive-polymer sensing technology with a novel measurement method, eliminating the need for temperature correction and calibration by the user. The sensor, which is calibrated at Precon before shipment, includes a thermistor and circuitry to correct for temperature and calculate the true relative humidity. The sensor provides both humidity and temperature outputs and is accurate to + 2%.

The output of the HS-2000V is ratiometric, with the output voltage varying from zero to the supply voltage as the measured parameter varies from zero to full-scale. For example, at a supply voltage of 5.0 volts, 50% RH produces a 2.5 volt output signal on the RH output pin.

The HS-2000V covers a standard temperature range of -30 to +85 °C, while the HS-2000VE covers an extended temperature range of -30 to +100 °C.

The HS-2000V can be modified to provide an output anywhere within the supply voltage range. Contact Precon to discuss your specific requirement.

The four-pin connection provides for easy installation or replacement in the field, reducing the overall cost to maintain large or complex systems.



Features

- RH & Temperature Outputs
- Temperature Compensated
- Factory Calibrated
- Accurate to $\pm 2\%$
- Field Replaceable
- Good stability
- Excellent Chemical Resistance
- Analog Voltage Output
- Low cost

Evaluation Kit Available

Typical Applications

- OEM Equipment
- Medical
- HVAC
- Pharmaceutical
- Computer Rooms
- Industrial
- Critical Space Monitoring
- Weather Metrology
- Humidifiers
- Data Logging
- Automation
- Refrigeration
- Environmental Chambers
- Laboratory
- Clean Rooms

MAXIMUM RATINGS

Operating Temperature...-30 to +85 °C (HS-2000V)
-30 to +100 °C (HS-2000VE)

Storage Temperature.....-40 to +125 °C

Operating Humidity Range.....0-100 percent

Supply Voltage.....+5.5 volts

Soldering Temperature.....10 sec at 250 °C (520 °F)

SPECIFICATIONS

Humidity

Accuracy..... $\pm 2.0\%$ RH typical, 0-100% non-condensing (Note 1)
 Linearity..... $\pm 0.5\%$ RH
 Hysteresis..... $\pm 1.0\%$ RH , maximum
 Temperature
 Coefficient..... $\pm 0.008\%$ RH / °C, maximum
 Response Time.....25 sec. in slow moving air at 25 °C
 Recovery Time
 (from condensation).....10 seconds
 Stability..... $\pm 0.5\%$ RH / year
 RH Voltage Output.....Ratiometric: 0 v to Supply voltage
 corresponds to 0% to 100% RH

Temperature

Accuracy..... ± 0.40 °C Typical (Note 2)
 Temperature Voltage
 Output.....Ratiometric: 0 v to Supply voltage
 corresponds to -30 to +100 °C
 Response Time.....50 sec. in slow moving air

General

Power Requirements...
 Voltage Supply.....2.0 – 5.5 volts, -30 to 85 °C
 4.5 – 5.5 volts, -30 to 100 °C
 Operating Current.....1.5 mA, maximum (Note 3)
 1.2 mA, typical
 Output Slew Rate.....0.015 volt / second (Note 4)
 Load Impedance.....50,000 ohms minimum (Note 5)
 Package.....Four pin SIP with 0.100 inch lead spacing
 Handling.....ESD >4 KV, Human Body Model

PIN DIAGRAM

(Front View)



Pin # 1 2 3 4

Pin 1	Temperature Out (0 to Vsupply)
Pin 2	Power (2 to 5.5 volt)
Pin 3	RH Out (0 to Vsupply)
Pin 4	Ground

Notes:

1. See Figure 2 on page 3
2. See Figure 3 on page 3
3. Supply voltage equals 5 volts. Does not include current supplied to loads connected to temperature and relative humidity outputs
4. For a discussion on slew rate, see Application Note #1 on page 4.
5. For loads between 1k to 50k, contact factory.

FIG. 1 OPERATING CONDITIONS

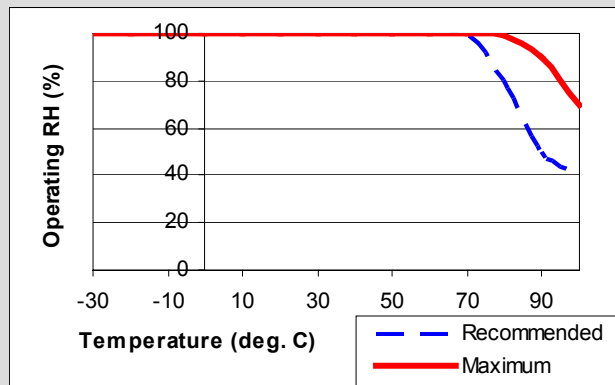


FIG. 2 RH ACCURACY

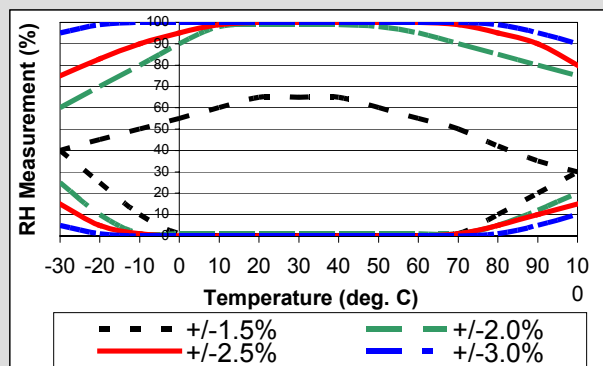
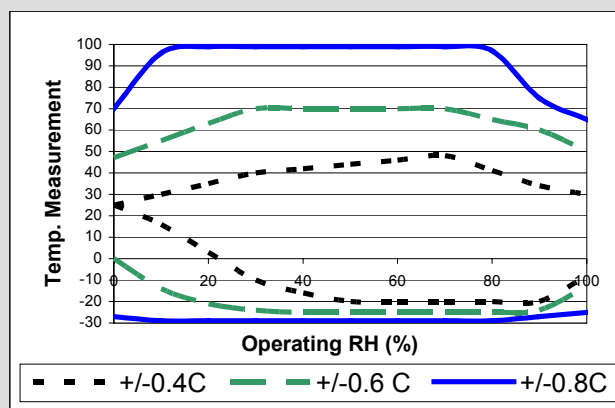
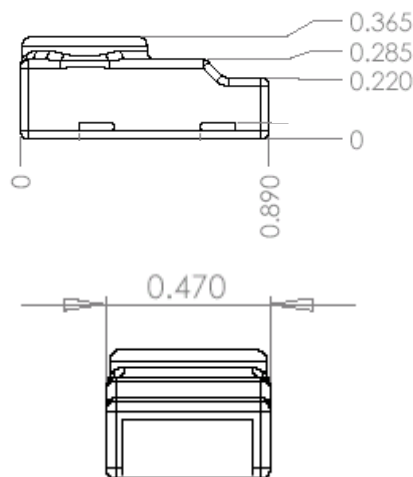


FIG. 3 TEMPERATURE ACCURACY



Dimensions



Tolerance on all dimensions ± 0.005 inch

Ordering Information

MODEL NUMBER	DESCRIPTION
HS-2000V	Relative humidity and temperature sensor: Analog voltage output; RH range: 0 to 100%; Temperature range: -30 to +85 °C
HS-2000VE	Relative humidity and temperature sensor: Analog voltage output; RH range: 0 to 100%; Temperature range: -30 to +100 °C

Application Notes

1. Stabilization Period: The HS-2000V requires a stabilization period of up to 5 minutes upon powering up the sensor. This is primarily due to the slew rate of the output circuit. When the sensor is first powered up it will read near zero volts. After a short period (less than 15 seconds), the sensor output will begin to increase. Since the output is slew rate limited, the final stabilization time will depend on the ambient conditions. The longest stabilization is required when the ambient parameter, either temperature or humidity, is near full scale (130 degrees C or 100% RH respectively) since these will generate output voltages near the supply voltage.

2. Temperature Output: The temperature output is ratiometric over the range of -30 to +100C for both the HS-2000V and the HS-2000VE.

3. PCB Connectors: It is recommended that HS-2000V be socketed rather than soldered to circuit boards. If a direct solder connection is required, it is recommended that hand-soldering be performed using a rosin-based flux. The soldered surfaces may be cleaned with isopropyl alcohol (do not immerse). The recommended PCB sockets include:

Surface Mount:

Mill-Max: 310-93-104-41-105, 4 pin SMT, Left hand footprint, 30 micro inch gold plate

Mill-Max: 310-93-104-41-107, 4 pin SMT, Right hand footprint, 30 micro inch gold plate

These sockets are available from Digi-Key in 64 pin strips. See part number ED23064-ND

Through hole:

Mill-Max: 310-93-104-41-001, 4 pin standard solder tail, 30 micro inch gold plate

These sockets are available from Digi-Key in 63 pin strips. See part number ED7063-ND

4. Chemical Resistance: Contact Precon for data on resistance to specific chemicals and environments.

Warranty

WARRANTY: The Seller warrants that Warranted Goods shall not fail to function in accordance with the seller's specifications because of defects in material or workmanship, for one year from the date of purchase. The foregoing warranty is expressly in lieu of all other warranties, express or implied, including warranties of merchantability or fitness for a particular purpose, or any other matter with respect to the goods are excluded and shall not apply to the goods sold. The warranty undertaking in this agreement does not apply to any goods that have been subjected to accident, disaster, loss or damage during shipment, neglect, misuse, improper installation, corrosive atmosphere harmful to electronic circuitry, excessive electromagnetic fields, failure or insufficiency of electrical power or unusual electrical surge or shock, nor to dysfunction or malfunction of, or caused by, any other equipment or device (other than equipment or devices you have purchased from us) to or in which such goods have been attached or installed.

Seller's employees, agents and/or representatives may have made oral statements about the goods sold or to be sold. Such statements DO NOT constitute warranties and ARE NOT part of a sales Contract. Seller's liability to Buyer, their agents, employees, customers, assigns, successor or other related parties for any and all losses or damages resulting from Seller's breach of a sales Contract, whether in tort or in contract or otherwise, shall be limited to the replacement of a like quantity of goods sold and IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR CONTINGENT DAMAGES (including, without limitation, loss of anticipated profits, business interruption, loss or use or revenue, litigation costs, cost of capital, Buyer's fixed costs, or avoidable costs).

All specifications are subject to change without notice. For the latest specifications, visit our website at www.preconusa.com